

CERTAMEN MELASTOMATACEIS IX.

25437

John J. Wurdack
Dept. of Botany, U.S. National Museum

Except for several problems in species groups for which types or type-notes are currently not available, consideration of the Depto. Amazonas Melastomataceae collected in 1962 has been completed; the field work was assisted by a grant from the National Science Foundation and the initial taxonomic remarks were published in *Phytologia* 9: 406-426. Dr. Ramón Ferreyra has continued the sampling of the Amazonas and related Cajamarca and Piura floras, partly assisted also by the National Science Foundation; comments on his and Acleto's collections of Melastomataceae have been included where appropriate. Drs. Sagástegui and López Miranda are continuing to furnish material of jalca-zone species from somewhat further south in Peru, mostly in La Libertad. Still lacking for definition of the southern limits of the jalca are adequate recent materials from the eastern cordillera in northern Libertad and northernmost Huánuco; together with the Cordillera Condor on the Ecuadorian frontier and the northern isolated part of the Cordillera Vilcabamba, these are the most promising of the botanically little-known high mountain zones in Peru and will well merit the attention of vigorous field men (but not the usual North American tyros) who can both manage exploration and return with well-prepared specimens.

Also included herewith are initial comments on the extensive Ecuadorian collections made in recent years by various Regnelidlian expeditions; these critical materials have been made available for study by Dr. Ahlner and Dr. Afzelius of the Naturhistoriska Riksmuseum, Stockholm, through the intermediacy of Dr. Asplund. Where appropriate, notes on the collections of Asplund, Harling, Fagerlind & Wibom, and Lugo have been incorporated into the accounting of recent Ecuadorian materials collected by Camp, Maguire & Maguire, Cazalet & Pennington, and Dodson, to be published in the *Memoirs of The New York Botanical Garden*. Additional remarks on the extensive extraneous Regnelidlian collections will continue in the future. To relieve my middle Andean preoccupation, the current notes have been leavened with some West Indian, Colombian, and Brazilian reflections.

Since my revision of the genus Brachyotum, the only significant accumulation of materials has been from northern Peru. Certainly the species density center for the genus is in Depto. Amazonas and indeed the problems had oriented long-range plans for field work toward this region since 1950. Peruvians living in Amazonas use the vernacular name "Sarcilleja" ("ear-pendants" in Quechua, referring to the pendulous flowers) for all species

of Brachyotum found there; the same vernacular name is also used for species of Fuchsia. A local remedy in Molinopampa for pneumonia is a petal infusion from any of several species, but especially from B. weberbaueri Cogn. Seeds of several species collected in 1962 were distributed by F. G. Meyer to various New and Old World botanical gardens. M. L. Solt has growing in Beltsville B. multinervium, B. radula, B. cogniauxii, and (from the Colombian Páramo de Chisaca) B. strigosum; of these, B. radula flowered in March, 1964, in about one year from seed. All of the numerous seedlings from each seed lot have been quite uniform morphologically.

The effective pollinators of Brachyotum species in Amazonas are hummingbirds and the genus must be the most important food source for these birds, of more significance there by sheer abundance than Fuchsia, Vacciniaceae, Labiatae, or Lobeliaceae. Dr. Alexander Wetmore (personal conversation) says that hummingbirds may prefer red flowers, but are not effectively color-specific in feeding. Grant (Evolution 3: 82-97. 1949) also noted that hummingbirds are not particularly species-constant. Thus the hybridity potential in Brachyotum is great in Amazonas. Actually the hybrid-origin individuals are percentage-wise quite rare. However, one of the Peruvian assistants during the 1962 field work, Segundo Sanchez Barrantes, had a discriminating eye for subtle morphologic variants; thus there rapidly accumulated a series of aberrant specimens which, herbarium-wise, would give disproportionate weight to the hybridity incidence. A micro-species taxonomist could easily proliferate binomials; for me practicality has induced discursive treatment without nomenclatural formality.

BRACHYOTUM QUINQUENERVE (R. & P.) Triana var. PUSILLUM Wurdack

The northern variety is quite common in the jalca zones above Laguna Pomacocha and near Molinopampa. Typically the corolla is a very deep bluish purple. A form with white petals margined pink was once seen near Molinopampa (Wurdack 1401), but showed no vegetative evidence of gene infiltration from other species.

BRACHYOTUM PARVIFOLIUM Cogn.

One of the commonest understory shrubs in the Molinopampa scrub forest (Wurdack 1354 p.p., 1619), B. parvifolium reaches its flowering peak in the latter part of May or early June. The robustness criterion originally cited (Mem. N.Y. Bot. Gard. 8: 367. 1953) for separation of B. barbeyanum is not valid, but the petal color and ovarial hair differences still seem applicable. One hybrid with the sympatric B. quinquenerve var. pusillum was collected in the Molinopampa jalca (Wurdack 1354 p.p.). Vegetatively this collection is somewhat closer to B. quinquenerve var. pusillum; reproductively, except for the 4-merous flowers and moderately short-strigose hypanthia, it resembles B. parvifolium (greenish-white corollas, large and adaxially strigose sepals). One of the abundant understory shrubs on the lower

eastern Calla-Calla slopes resembles a robust B. parvifolium, but with distinctly 5-nerved leaves and attenuated foliar pubescence, as well as glandular ovary hairs (Wurdack 1179); probably this population merits specific recognition (no possible parents for hybrid origin being noted in the Calla-Calla flora), but more observations are needed. The Calla-Calla shrubs probably flower abundantly in June, being mostly in young fruit on July 7.

BRACHYOTUM RADULA Triana

B. radula is common on Puma-urcu and Calla-Calla and quite constant there in 5-merous and pubescent petals; the closely related B. maximowiczii Cogn. is sympatric with B. radula, but generally at lower elevations with some altitudinal overlap. On the slopes of Cerro Malcabal is a small hybrid population with leaves yellow-tinged beneath (Wurdack 1434) or even reddish-tinged (Wurdack 1435). Vegetatively and in flower size, the Malcabal plants are like B. radula but with 4-merous flowers and nearly or quite glabrous petals as in B. maximowiczii. Atop Malcabal was a single plant (Wurdack 1436) like B. maximowiczii except for the somewhat pubescent petals; probably a slight infiltration of B. radula genes is represented in this collection.

BRACHYOTUM CORONATUM (Triana) Wurdack, comb. nov.

Pleroma coronatum Triana, Trans. Linn. Soc. Bot. 28: 41. 1871.

Tibouchina coronata (Triana) Cogn., Mart. Fl. Bras. 14, 3: 307. 1885.

Brachyotum racemosum Cogn., Bot. Jahrb. 42: 132. 1908.

Examination of the holotype (Mathews 3211, K), in concert with recent Amazonas collections (Wurdack 676 and 1799), leaves no doubt as to the generic adjustment. The corolla is pale greenish yellow (not purple) and the calyx lobes are persistent. Mathews 3211 and the cited material of B. racemosum (Mem. N. Y. Bot. Gard. 8: 370. 1953) show somewhat longer upper leaf surface hairs than my current collections, but the variability does not seem significant. B. coronatum is an abundant shrub or small tree on both Puma-urcu and the eastern Calla-Calla slopes; probably it is the tallest species of the genus, commonly reaching 8 meters (although flowering when smaller), with one tree of 15 meters having been seen on the Calla-Calla slopes. From the description and type photograph (Macbride 16807), Tibouchina virescens Cogn. almost surely should be placed in Brachyotum, perhaps as conspecific with B. coronatum; the generic status cannot be settled, however, without actual examination of Junin collections.

BRACHYOTUM MULTINERVIUM Wurdack, sp. nov.

De speciebus 20-28 revisionis meae differt foliis 7-11-nervatis.

Trichomata laevia. Ramuli novelli obtuse quadrangulati demum teretes sicut petioli foliorum venae primariae subtus pedunculique sparse strigulosi pilis 0.4-0.8 mm longis crassis

arcte appressis. Petioli 2-4 mm; lamina (2-)3-4 X 1.5-3 cm, tenuiter coriacea ovata, apice late hebeti-acuto basi paulo (3-6 mm) cordata margine integro et appresso-ciliolato pilis ca. 1 mm longis et 1 mm inter se distantibus, 7-9(-11)-nervata nervis primariis supra impressis subtus elevatis nervis secundariis supra invisibilibus subtus paulo obscuris et 3-4 mm inter se distantibus tertiariis non vel (subtus) obscure evolutis, supra et subtus nervis primariis marginibusque exceptis glabra. Inflorescentia terminalis vel in ramis lateralibus terminalis; flores 4-meri penduli terni vel in dichasiis tribus terni; pedunculus gracilis 2.5-3.5 cm longus ad apicem bracteis duabus 9-10 X 1-2 mm acutis caducis armatus; pedicelli penduli 10-15(-25) mm longi 2-5(-10) mm supra basim articulati et bibracteolati bracteolis 3-3.5 X 0.3-0.4 mm mox (in alabastris) caducis. Hypanthium (ad torum) 7-7.5 mm longum sicut pedicelli sepalaque extus sparse strigulosum pilis 0.2-0.6 mm longis et 2-5/mm. Calycis tubus 0.7-0.8 mm altus, lobis 7.5 X 2.5 mm lanceolatis acutis ciliolatis sinu acuto. Petala 14.5-15 X 11.5-12.5 mm obovata apice obtuso ciliis sparsis 0.1-0.25 mm longis eglandulosis vel valde caduce glandulosis. Filamenta 3.5-4.1 mm glabra; antherarum thecae 4-5.8 mm, connectivo ad basim ventraliter 0.3-0.4 mm libero acute bilobulato. Stylus 22-23 X 0.5 mm glaber per 5-8 mm exsertus; ovarium apicem versus densiuscule strigulosum pilis robustis eglandulosis 0.2-0.6 mm longis, lobis apicalibus 0.6-0.9 mm longis.

Type Collection: J. J. Wurdack 1304 (holotype US 2404282; isotype USM; 13 additional isotypes to be distributed), collected in a slope seepage below Km 415 of the Balsas-Leimebamba road, middle eastern Calla-Calla slopes, Prov. Chachapoyas, Depto. Amazonas, Peru, elev. 3100-3250 m, 11 July 1962. "Shrub 0.4-1.5 m, locally frequent. Hypanthium yellow-red; corolla black-purple."

The foliar characters in B. multinervium are unique in the genus; the young leaves are often red-tinged beneath. In inflorescence features, perhaps B. sanguinolentum (Naud.) Tr. and B. alpinum Cogn. are the closest relatives. Wurdack 1263, from a single plant growing at the scrub forest edge near B. multinervium (but not in a seepage), represents a hybrid, with B. multinervium as one parent (multinerved leaves; pendulous flowers in dichasia, but with short peduncles). The other parent was perhaps B. naudinii (leaves petiolate, strigulose above; moderately strigulose hypanthia). The possible negation of the latter parent is the predominance of 5-merous flowers (12, 5-merous; 8, 4-merous), but the only possible parent with 5-merous flowers and smooth hairs seen in the Calla-Calla region, B. aff. parvifolium Cogn., does not seem as likely as B. naudinii.

BRACHYOTUM NAUDINII Triana

The northern population of this species (Mem. N. Y. Bot. Gard. 8: 383-384. 1953) is quite common in Amazonas, both on the eastern slopes of Calla-Calla (Wurdack 1172, Ferreira & Acleto 15268, 15275) and on Puma-urcu (Wurdack 1141); the salient

features are 4-merous flowers, deep purple petals, and pubescence development suggestive of B. tyrianthinum Macbr. but with smooth hairs. One rare hybrid from Calla-Calla (but with B. naudinii genes predominating) is represented by Wurdack 1172, the leaves being larger than in the typical population, the petals pink, and, especially, the sepals inside strigulose; the only pale-petaled species in the immediate vicinity, B. aff. parvifolium (vide supra) also has adaxially strigulose sepals. Another hybrid, but also with B. naudinii genes slightly predominating, was sampled in Wurdack 1350; the roughened hairs, tendency to terminal flower triads, slight predominance of 5-merismy, and sparsely strigulose petals suggest B. radula as the other parent. Still another hybrid (Wurdack 1349) is almost exactly intermediate toward B. cogniauxii Wurdack, with slightly roughened hairs, arcuate-strigose branchlets, partial development of floral bracts, and adaxially strigulose calyx lobes. A fourth hybrid (Wurdack 1133) intermediate in foliage, pubescence roughening, and corolla color toward B. angustifolium Wurdack (with the calcarate anthers of B. naudinii and the pendulous dichasia of B. angustifolium) occurs on Puma-urcu along with populations of its parent species; of the examinable flowers, 6 were 5-merous and 12, 4-merous. Certainly the rarity of these hybrids is conditioned by the temporal isolation, B. naudinii flowering somewhat later than the other parents in the various putative hybrids, although sympatric with them at 2750-2850 m elevation; also it is not found at higher elevations (2900-3300 m) on the Calla-Calla slopes, where B. radula and B. cogniauxii are still abundant. B. tyrianthinum Macbr., found as near Calla-Calla as Celendín (Cajamarca), is quite suggestive in superficial aspect of some of the B. naudinii hybrids.

BRACHYOTUM LONGISEPALUM Wurdack, sp. nov.

B. strigoso (L. f.) Tr. affinis, sed foliis supra tuberculato-strigulosis, calycis lobis lanceolato-oblongis non imbricatis.

Trichomata laevia. Ramuli teretes sicut petioli pedicellique dense strigulosi. Petioli 2-4 mm; lamina 7-15 X 2.5-4 mm rigida oblonga vel lanceolato-oblonga apice rotundato basi late acuta marginibus valde recurvatis, trinervata nervis lateralibus supra non visis, supra in lineis 6-8(-10) dense tuberculato-strigulosa, subtus dense strigulosa. Flores 5-meri nutantes in ramulis lateralibus singuli vel in dichasiis 3-floris; pedicelli 5-7 mm longi, bracteolis duabus plus minusve persistentibus 7-13 X 1-2 mm intus glabris extus modice strigulosis, 2-5 mm infra hypanthii basim insertis. Hypanthium (ad torum) 7-9 X 6 mm; calycis tubus 0.8-1 mm altus, lobis 11-13 X 3.5-4.5 mm extus sicut hypanthio dense strigulosis vel centraliter brevistrigosis intus glabris vel ad apicem ipsem sparse strigulosis. Petala ut videtur nigro-purpurea 17.5-18 X 14-15 mm elliptica apice rotundato et vix retuso ciliis glanduliferis glandulis mox caducis. Stamina (vix immatura)

glabra, antheris 3.5-3.7 mm apicaliter minute porosis, connectivo ventraliter ad basim biappendiculato, appendicibus ab thecis 0.9-1 mm liberis. Stylus 27 X 0.5-0.6 mm glaber; stigma punctiforme; ovarium ad apicem dense strigulosum pilis p. p. glanduliferis.

Type Collection: A. López Miranda & A. Sagástegui 3338 (holotype US 2338770; isotype TRP), collected in the jalca on the Travesía Laplap between Longotea and Bolívar, Prov. Bolívar, Depto. La Libertad, Peru, elev. 3600 m, 2 June 1960. "Arbusto. Flores vinosas."

Paratype: A. López & A. Sagástegui 3511 (NY, TRP), from the Pampa de Huayno-huincho, Huaylillas, Prov. Pataz, Depto. La Libertad, Peru, elev. 3350 m, 23 May 1961.

B. strigosum has much finer upper leaf surface pubescence, wider and imbricate calyx lobes, and non-glandular ovary pubescence. Perhaps a closer relative in floral form (but with much larger 5-nerved leaves) is B. benthamianum Tr., although the floral bracteoles in the Peruvian species never assume the bracteal proportions found in the Ecuadorian congener.

BRACHYOTUM MULTITUBERCULATUM Wurdack

The species is abundant along the Molinopampa-Diosan trail on the south side of the height-of-land (Wurdack 1606); it also occurs sporadically on the other hills near Molinopampa. One apparent hybrid with B. barbeyanum (Wurdack 1667) was found on Cerro Yama-Uma; it is rather closer to B. barbeyanum and does not have flaring-pored anthers. The smooth hairs in 1667 preclude consideration of any of the abundant rough-haired species near Molinopampa. The other wide-pored species of Amazonas, B. lycopodioides Triana, was abundant in the cumbre of Cerro Malcabal, where no other congener occurred; the petals of this vegetatively bizarre shrub are lavender (Wurdack 1411), a color not duplicated in other Amazonas species.

BRACHYOTUM ROSTRATUM (Naud.) Triana

B. rostratum is a frequently occurring species on the Calla-Calla crest (Wurdack 1190). On the approaches to Cerro Campanario was seen a hybrid (Wurdack 1590) having the general vegetative features of B. rostratum (and pink petals), but sepals longer than usual and adaxially strigulose, as well as calcarate anthers; perhaps the other parent was B. cogniauxii Wurdack. On the upper slopes of Puma-urcu, there is a variable population characterized by leaf blades more-or-less intermediate between B. rostratum and B. angustifolium (vide infra), nearly smooth trichomes, and notably glandular-setose hypanthia. Although the suggested parent species were not collected on Puma-urcu, I still believe in the hybrid origin of Wurdack 1697 and 786, the former vegetatively more like B. angustifolium and the latter like B. rostratum. The Puma-urcu shrubs resemble B. seorsum Wurdack in the combination of strigulose peduncles and glandular-setulose pedicels, but do not show the marked leaf veinlet reticulation (lower surface) of the Ecuadorian population. Dr. Ferreyra has collected near

Celendín (15042, 15126) another aspect of this complex, with moderately roughened trichomes, leaves as in typical B. rostratum, and inflorescences as in B. seorsum; accordingly, B. seorsum cannot be maintained as specifically separable from B. rostratum.

BRACHYOTUM ANGUSTIFOLIUM Wurdack

The type locality is the Chachapoyas region; the species is abundant on the Calla-Calla crest (Wurdack 1697, Ferreyra & Acleto 15330). On Puma-urcu above Chachapoyas, there apparently has been hybridization with both B. maximowiczii and B. radula; the leaf blades and inflorescences in the hybrids are intermediate, the petals pink (Wurdack 674).

MERIANIA MEXIAE Wurdack, sp. nov.

M. hexameræ Sprague affinis, sed foliis ovato-lanceolatis fere sessilibus basi cordata floribus minoribus.

Ramuli teretes graciles sicut folia inflorescentia floresque glabri. Folia in quoque jugo aequalia vel plerumque inaequalia (usque ad 1:2.5); petioli 0.3-0.7 cm; lamina (5-)9-16(-20) X (2.5-)4-7(-8) cm tenuiter rigida integra ovato-lanceolata apice hebeti-acuto, basi 0.4-1.1 cm cordata, 5-nervata nervis secundariis 3-5 mm inter se distantibus nervulis supra obscure vel paulo elevatis subtus paulo elevato-reticulatis, subtus sparse brunneo- vel nigro-punctata. Panicula 22-27 cm longa laxa multiflora; flores 6(-7)-meri, pedicellis 1-2.5 cm longis plerumque paulo supra medium articulatis, bracteolis delapsis non visis. Hypanthium (ad torum) 3-4.5 X 3.5-4 mm; calyx 2-2.5 mm altus integer, dentibus exterioribus non evolutis. Petala 16-25 X 11-16 mm glabra non ciliata oblongo-obovata apice asymmetricè rotundata. Stamina isomorphica glabra; filamenta 8-10 mm longa; antherarum thecae 7.5-10 mm subulatae ad apicem dorsaliter minute uniporosae, connectivo in calcar acutum dorsali 2-3 mm longum infra filamentum insertionem protracto dorsaliter per 3.4-4.3 mm ad basim vix elevato, appendice dorsali ascendente non evoluta. Stylus 14-16 X 1-0.6 mm glaber; ovarium 6(-7)-loculare glabrum apice vix (0.3 mm) concavo.

Type Collection: Ynes Mexia 6826 (holotype US 1663013; isotype NY), collected along river bank in dense forest between Baños and Mera, Prov. Napo-Pastaza, Ecuador, elev. 400-500 m, 23 Feb. 1935. "Shrub 2.5 m, infrequent. Flowers dark cerise."

Paratypes (all Ecuador): Dodson & Thien 2020 (US, MO), in rainforest at Topo on the road from Baños to Puyo, Napo-Pastaza, elev. 1300 m, 9 Jan 1962. "Vine; sepals very dark purple; petals purplish red; filaments purple; anthers yellow."; Pearce 421(K), from "east of the Andes, 5000-6000 ft."; Penland & Summers 155 (NY), from Río Margarjitas, Tungurahua, 1225 m, 19 Mar. 1939; Fagerlind & Wibom 2428(S), from Río Negro, Prov. Tungurahua; Asplund 19379 (S), from Río Zuñag, Prov. Napo-Pastaza, elev. 1150 m, 14 Feb. 1956.

Of 17 observable flowers, 15 were 6-merous and 2 were 7-merous. M. hexamera has well-petioled basally tapering leaves,

as well as hypanthium plus calyx 10-12 mm long. In Cogniaux' monograph, *M. mexiae* would key to *M. rigida* (Benth.) Tr., with smaller leaf blades that are distinctly petioled and apically rounded, 5-merous flowers, and evident (albeit very short) thick blunt external calyx teeth. *Mexia* 6826 was distributed as *Axinaea sessilifolia* Tr., which however has quadri-alate branches, plinerved leaf blades, and an obvious dorsal bulb on the stamen connective; unfortunately Rimbach 211 (NY, US), the type collection of *Meriania simsiana* Gleason, actually represents *A. sessilifolia*. For both *Meriania rigida* and *Axinaea sessilifolia*, type collections have been examined.

M. hexamera is sympatric in Napo-Pastaza with *M. mexiae*: Asplund 19378 (S), Cashurco-Río Zuñag, elev. 1200 m; Lugo 55 (S), Mera. An apparent hybrid between the two species, with cordulate leaf bases, well-defined upper leaf surface veinlet reticulation, and hypanthium plus calyx 8-10 mm long, is represented by Penland & Summers 241 (NY), from along the Río Pastaza between Hda. Victoria and the Río Topo, Tungurahua, elev. 1230 m, 23 Mar. 1939; the *M. hexamera* genes seem slightly predominant.

3724 LEANDRA PELTATA Wurdack, sp. nov.

De affinitate mihi incognita, sed ob folia peltata bene distincta.

Ramuli teretes primum sicut petioli foliaque subtus modice setosi, pilis 1-2 mm longis plerumque non glanduliferis demum glabri. Folia per paria in dimensionibus plerumque satis (1: 2) disparilia sed in forma isomorphica; petioli 1.5-7 cm longi; lamina 5-15 X 2-5 cm membranacea oblongo-lanceolata apice gradatim per 1-2 cm hebeti-acuminato basi rotundata et distincte (3-7 mm) peltata margine integro et subappresse ciliato, 5-nervata, nervis tertiariis obscure evolutis laxe reticulatis. Inflorescentia terminalis 3-5 cm longa sparse glanduloso-setosa axe refracto ramis lateralibus 0.7-1.3 cm longis rectis 1-3(-5)-floris; flores 5-meri, pedicellis 1-5 mm longis glabris ca. 0.5 mm infra hypanthii basim bibracteolatis, bracteolis 0.4-0.7 mm longis subulatis. Hypanthium (ad torum) 1.4 mm longum modice setulosum setulis 0.5-1 mm longis plerumque glanduliferis; calycis tubus 0.2 mm altus, lobis interioribus 0.5-0.6 mm altis ovato-oblongis apice rotundato et pilis 2-3 glanduliferis 0.3-0.5 mm longis terminato, dentibus exterioribus ca. 0.3 mm longis tuberculatis non eminentibus apice setulifero. Petala glabra 3.1 X 1.4 mm asymmetrico ovata apice hebeti-acuto. Stamina isomorphica glabra; filamenta 1-1.2 mm; antherarum thecae 1.6 mm longae oblongae apice dorsaliter uniporoso, connectivo ad basim dorsaliter dente hebeti bilobulato 0.15 mm longo ornato. Stylus 4.1 X 0.4-0.25 mm glaber; stigma paulo expansum 0.45 mm diam; ovarium 5-loculare 1/4-inferum glabrum apice in collum 0.4 mm altum et 0.1 mm 5-lobulatum protracto; bacca globosa non costata; semina paulo immatura cuneata laevia 0.6 X 0.2 mm.

Type Collection: J. J. Wurdack 2474 (holotype US 2404488; isotype USM; 2 additional isotypes to be distributed), collected

on a forested ridge on right bank of Río Santiago 3-4 km above mouth, Prov. Bagua, Depto. Amazonas, Peru, elev. 300-350 m, 29 Oct. 1962. "Shrub 2 m. Corolla white."

While *L. peltata* has somewhat the aspect of the 4-5-merous species of *Clidemia* with diffuse inflorescences and tiny flowers (*C. dimorphica* Macbr. and allies, *C. diffusa* Donn. Sm., *C. semijuga* (Gleas.) Wurdack) and indeed some of these species show near approaches to peltate leaves, the floral details cannot be reconciled sufficiently for placement in *Clidemia*. Nor can this Santiago novelty be accommodated near any species of *Ossaea*. Admittedly the petals are bluntly acute, but are less rounded than those of the Mexican *L. cornoides* (S. & C.) Cogn. In Cogniaux' monographic arrangement, *L. peltata* should probably be aligned in Sect. *Chaetodon* where at least *L. cornoides*, *L. laevigata* (Tr.) Cogn., and *L. refracta* Cogn. also have 5-celled ovaries.

MICONIA CRASSIPES Triana

Obviously the Peruvian type locality, not known to Cogniaux or Macbride, is the Chachapoyas region, where this species is common in sheltered areas. Recent collections in Depto. Amazonas, all from 2200-2500 m elevation, are from Quebrada Molina below Chachapoyas (Wurdack 617), near Leimebamba (Ferreyra 15548, 15593), and the Laguna Pomacocha basin (Ferreyra & Acleto 15174, Wurdack 827).

MICONIA ALBORUFESCENS Naud.

M. arirambae Huber, Bull. Soc. Bot. Gen. ser. 2, 6: 192. 1915.

M. cachimbensis Brade, Arq. Jard. Bot. Rio 16: 14. 1959.

Excellent flowering material from the Rio Doce, Minas Gerais, Brazil (Pabst 7113, US) has enabled the completion of the synonymy previously suggested (Mem. N. Y. Bot. Gard. 10, no. 5: 172. 1964). The species thus is of wide distribution in savannas from Brazil to Venezuela. While there is a superficial resemblance to *M. albicans* (Sw.) Tr. (and indeed Blanchet 3309 was cited by Cogniaux as a mixture of the two species), *M. alborufescens* can be distinguished by the agglomerated non-secund flowers and the discrete (stellulate) tomentum on the young stems and inflorescences. Through Dr. L. B. Smith and Dr. Pabst, it has been possible to borrow for examination the holotype (Pereira 1779) and paratype (Pereira 1795) of *M. cachimbensis* (RB); the Cachimbo plants conform exactly to material from other parts of the range of *M. alborufescens*.

MICONIA ERNSTII Wurdack, sp. nov.

Sect. *Glossocentrum*. *M. tetragonae* Cogn. et *M. perturbatae* Wurdack in antherarum forma affinis, sed foliis ad basim paulo cordatis subsessilibus floribus sessilibus in inflorescentiae ramis secundis.

Ramuli primum paulo sulcati mox teretes sicut petioli foliorum venae primariae subtus inflorescentiae hypanthiaque

primum lepidibus ferrugineis minutissimis sparse obsiti mox glabrati. Petioli 0.3-0.6 cm; lamina tenuiter coriacea integra supra nitidula 6-11/4 X 3-5 cm oblongo-elliptica apice subabrupte per 0.5-1.5 cm acuminato basi 0.2-0.5 cm cordata, 3- vel obscure 5-nervata nervis secundariis 0.5-1 cm inter se distantibus tertiariis non vel obscure evolutis, supra et subtus in superficie venulisque glabra in venis primariis mox glabrata. Panicula 7-10 X 3-5 cm oblonga, ramulis paulo adscendentibus secundifloris; flores 5-meri sessiles, bracteolis 0.2-0.3 X 0.2 mm triangularibus in alabastris valde caducis. Hypanthium (ad torum) 2.2 X 1.5 mm obscure 10-costatum demum glabratum; calycis tubus 0.3 mm altus, lobis interioribus 0.2 mm altis ad apicem obtusis ad basim remotis, dentibus exterioribus minutissimis obscure elevatis non eminentibus. Petala glabra 2-2.2 X 1.6 mm elliptico-oblonga apice paulo emarginato. Stamina paulo dimorphica glabra, filamentis 1.8-1.9 mm longis, antheris ventraliter minute (0.2 mm) uniporosis. Stamina maiora: antherarum thecae 1 X 0.55 X 0.6 mm, connectivo usque ad filamentum insertionem 0.8 mm prolongato dorsaliter sub insertionem dente hebeti 0.5 mm longo armato. Stamina minora: antherarum thecae 0.7 X 0.5 X 0.6 mm, connectivo usque ad filamentum insertionem 0.9 mm prolongato sub insertionem dorsaliter dente hebeti 0.2 mm longo armato. Stylus 3.3 X 0.4 mm glaber; stigma truncatum 0.3 mm diam.; ovarium 3(?)-loculare 2/3 inferum apice late conico 0.3 mm alto sparse minutissimeque puberulo; fructus immaturus paulo 10-costatus.

Type Collection: W. R. Ernst 1723 (holotype US 2436501; 9 isotypes to be distributed), collected on the south slope of Morne Macaque (Micotrin) on the road to Fresh Water Lake, Dominica, British West Indies, elev. ca. 760 m, 26 June 1964. "Shrub about 3 m tall. Flowers white to pale pink. Only a single plant observed."

Paratype: W. H. Hodge 513 (US), from the upper rainforest-clad slopes, Morne Anglais, Dominica, elev. 763-11142 m.

Both the suggested relatives have well-petioled non-cordate leaves, as well as pedicellate and smaller non-secund flowers. In Cogniaux' monograph, M. ernstii would key to near M. ligustroides (DC.) Naud.; that Brazilian species, especially as to var. cordifolia Cogn., vegetatively is reminiscent of the Dominica congener, but shows pedicellate flowers with linear anthers. None of the West Indian species of Sect. Glossocentrum more recently described by Urban (M. bisulcata Urb., M. leptantha Urb., and M. ossaeifolia Urb. & Ekm.) seem to be at all closely related to M. ernstii. M. trichotoma (Desr.) DC., also known from Dominica, differs in the larger well-petioled leaves and smaller non-secund flowers with shorter obliquely large-pored anthers; from the anther form, this species would perhaps be better placed in Sect. Chaenantha. On St. Lucia, there is a population (Proctor 17726, Cowan 1575, Cowan 1559), mistakenly distributed in herbaria as M. trichotoma, which suggests M. ernstii in reproductive features (secund flowers, well-prolonged connective); however the St. Lucia plants show much larger

well-petioled leaves with developed laxly reticulate tertiary veins; probably an undescribed species overlooked by earlier students of the Melastomataceae is represented. M. martinicensis Cogn. vegetatively has somewhat the aspect of M. ernstii, but differs at least in the apically rounded leaf blades; only sterile and fruiting collections (Duss 672, Hahn 1174) of this species, placed by Cogniaux in Sect. Cremanium, have been seen by me.

MICONIA LOREYOIDES Triana

M. killipii Gleason, Bull. Torrey Club 52: 387. 1925.

Despite Triana's statements, direct and implied, about glabrous filaments and style in Triana 4029, Macbride's excellent photograph (25982) agrees in all visible details with the various collections of M. killipii; especially significant in the photograph are the tendency to incrassate stem nodes, the lobed calyx, and the anther and stigma shapes. Also there is a Triana Chocó specimen (404, NY), perfectly consonant in buds with M. killipii but having glandular filaments (the style not seen), which had been matched at Kew by N. L. Britton under M. loreyoides; the Triana specimen, which is perhaps a misnumbered isosytype, also agrees in visible details and other label data with Triana 6258 (BM, New York photograph N.S.5610) annotated by Triana. A recent Ecuadorian collection of M. loreyoides is Asplund 16745 (S), from between El Volante and the Pilatón bridge, Pichincha, elev. 1700 m. It is especially unfortunate that Gleason's commemorative epithet should disappear into synonymy.

MICONIA GONIOSTIGMA Triana

M. megastigma Gleason, Bull. Torrey Club 68: 250. 1941.

Skutch 4558 represents a somewhat less pubescent phase of M. goniostigma, but with no other vegetative or floral variation. Both the quite pubescent and somewhat glabrescent forms are present on both sides of the Andes in Colombia and Ecuador. The following specimens with a reasonably compact spectrum of pubescence density have been examined:

Colombia. El Valle, Killip & Garcia 33936, Killip & Cuatrecasas 38770; Caquetá, Cuatrecasas 9044.

Ecuador. Esmeraldas, Mexia 8414, 8453; Leon, Mexia 6687; Napo-Pastaza, Skutch 4558, Fagerlind & Wibom 1142(S), Asplund 9529(S), 19425(S). The population around Mera, Napo-Pastaza (Harling 3399, Asplund 18431, Asplund 18696) is a quite glabrescent node in M. goniostigma, with setulose petioles, appressed-ciliate leaf blades very sparsely setulose beneath, very sparsely setulose inflorescence branches, and esetulose hypanthia.

M. goniostigma is very closely related to M. loreyoides despite the normal disparity in pubescence, there seemingly being no internal floral features for differentiation. The well-developed leaf blades in M. goniostigma are 7-nerved and the bracts and bracteoles rather persistent; in M. loreyoides, the leaf blades are 5-nerved and the bracts and bracteoles early-caducous in bud. The closest approach to M. loreyoides from

M. goniostigma is represented by Camp E-609 (NY), from dense rainforest in the Moro-Moro region 30 km west of Portovelo, El Oro, Ecuador; this collection shows 7-nerved caducously ciliolate leaf blades which are very caducously strigulose, rather persistent bracts and bracteoles, but no simple setae on the stems, inflorescence, or hypanthia. M. pichinchensis Benth. has the general aspect of a small-leaved form of the glabrescent element of M. goniostigma; however, the anthers are proportionately narrower and exappendiculate, the styles are elongate, and the stigmas are only minutely expanded (less than 1 mm diam.).

MICONIA FLORIBUNDA (Bonpl.) DC.

Wurdack 1057, from montane rainforest along the Yambrasbamba-Pomacocha trail between Yambrasbamba and Yanayacu, elev. 2200-2300 m, seems to be the first record for Peru, at least in the sense of Colombian material studied by Cogniaux. Unfortunately the Bonpland type collection of this species could not be located at Paris by F. G. Meyer in September, 1964. The two previously known Peruvian species involved in this complex, M. modica Macbr. and M. lasiostyla Gleas., both lack internal hypanthial ribs, as well as showing minor specific vegetative and floral differences.

MICONIA CLIVORUM Wurdack, sp. nov.

Sect. Amblyarrhena. M. hirtae Cogn. et (ex descr. et photic.) M. staphidioides (Naud.) Tr. affinis, sed floribus breviter pedicellatis stigmatibus expansis.

Ramuli primum paulo compressi demum teretes sicut petioli foliorum venae principales subtus inflorescentia hypanthiaque dense pilis stellulatis vel pinoideis 0.1-0.2 mm longis obsiti et modice (vel in inflorescentia hypanthisque modice vel sparse) pilis gracilibus laevibus erectis vel paulo deflexis in inflorescentia hypanthisque rare glanduliferis armati. Petioli (2.5-) 3-5(-8) cm; lamina 9-16 X 6-11 cm tenuiter rigida integra vel obscure serrulata subtus obscure foveolata ovata vel elliptico-ovata apice acuto vel paulo (1-2 cm) gradatimque hebeti-acuminata basi truncata vel obscure (ad 7 mm) cordata, 7- vel sub-9-nervata nervis secundariis 3-5 mm inter se distantibus supra paulo obscuris nervulis obscuris sed densiuscule reticulatis, supra modice bullulato-setulosa bullis 0.3-0.4 mm altis setis 0.5-0.8 mm longis, subtus in nervulis dense setulosa. Panicula 8-12 cm longa oblongo-pyramidata multiflora; flores 5-meri 1-1.3 mm pedicellati, bracteolis 0.5-0.7 X 0.1-0.2 mm ad pedicellorum bases insertis ante anthesim valde caducis. Hypanthium (ad torum) 2.2 X 2.3 mm; calycis tubus 0.9 mm altus, lobis interioribus 0.5-0.6 mm altis paulo pellucidis apice rotundato, dentibus exterioribus tuberculiformibus non eminentibus. Petala 2-2.3 X 1.7-2 mm glabra suborbicularia vel obovata apice rotundato et paulo emarginato. Stamina isomorphica glabra; filamenta 2-2.2 mm; antherarum thecae 1.5-1.8 X 0.6-0.7 mm oblongae poro 0.25 mm diam. ventraliter inclinato, connectivo non prolongato exappendiculato. Stylus 4.5-4.8 X 0.4-0.5 mm basim versus pilis debilibus

eglandulosis 0.1 mm longis sparse obsitus; stigma paulo expansum 0.7 mm diam.; ovarium (3-)4-loculare 1/3-1/2 inferum apice conico et in collum 0.6-0.7 mm altum ca. 0.4 mm 4-lobulatum circum stylum protracto sparse inconspicueque stellulato-furfuraceo.

Type Collection: J. J. Wurdack 1794 (holotype US 2404340; isotype USM; 9 additional isotypes to be distributed), collected on the upper slopes of Puma-urcu just north of Levanto, Prov. Chachapoyas, Depto. Amazonas, Peru, elev. 2700-2800 m, 29 Aug. 1962. "Shrub 2-6 m, occasional; cauline hairs red-tinged. Corolla white."

Paratype: Wurdack 1655, from the middle slopes of Cerro Yama-uma (Cerro Carán) above Taulia, 4-8 km south-southeast of Molinopampa, Prov. Chachapoyas, Depto. Amazonas, Peru, elev. 2700-3000 m, 11 Aug. 1962. "Shrub 3-7 m, frequent but rarely flowering at this time. Petals white."

M. hirta has much sparser upper leaf surface pubescence, more obviously caudate blades, sparsely barbellate stem hairs, and sessile flowers with very sparse hypanthial hairs, remote-based calyx lobes, and a punctiform stigma; however, there is a fundamental linkage to M. clivorum in the underlying stellulate pubescence on the stems and inflorescence, as well as the sporadic gland-tipped inflorescence hairs. The other species of Sect. Amblyarrhena in this alliance (spp. 392-398 of Cogniaux' monograph), most of which also have stellulate pubescence, all differ in obvious vegetative and reproductive features. In Cogniaux' key, M. clivorum would probably run to spp. 384-385 or 389-391; most of these species lack stellulate pubescence and/or flower pedicels, as well as individually differing in other characters. M. ruizii Naud., at present rather enigmatic to me, differs at least in the sessile flowers and completely inferior ovaries with depressed apices; also insofar as Jameson 835 (US) is concerned, the simple cauline hairs are much shorter than in M. clivorum and the filaments and styles are sparsely glandular-puberulous. Incidentally, although the original diagnosis indicated a glabrous style in M. scabra Cogn., the New York isotype (André 3880) shows a strigulose style and prominently setulose ovary apex. M. hamata Cogn., a species not represented by recent collections, differs (ex Macbride photo) in the narrower shortly 7-plinerved leaf blades with much longer lower surface hairs and the sessile flowers; also (fide Gleason notes), the hypanthial pubescence is merely simple and the 3-celled ovary is tipped with 10 bristles 0.4 mm long. M. barbipilis Gleas., the holotype (F) of which has been examined, is not closely related to M. clivorum, having the upper leaf surface bullae tipped with short thick hairs, the stems and inflorescence with only appressed stout densely barbellate hairs, and the flowers considerably larger.

MICONIA BRACHYANTHERA Triana

Wurdack 1058 (montane rainforest along the Yambrasbamba-Pomacocha trail, Prov. Bongará, Depto. Amazonas, Peru, elev. 2200-2300 m, 26 Jun. 1962) has been compared minutely with the

holotype (Mathews 1726, K) and agrees well in all details. The leaf blades are scarcely plinerved, the inner pair of primaries on the lower surface being inserted less than 5 mm above the base; the lower leaf surface and inflorescence hairs are each tipped with a minute caducous gland, discernible only under 50X-100X magnification. M. brittonii Cogn. is extremely close to M. brachyanthera, having the same minute glands on the inflorescence and lower leaf surface hairs, but differs in the moderately roughened (rather than sparsely and obscurely barbellate) cauline hairs and strigulose style; the expanded stigma is perhaps of no specific import if heterostyly exists in this complex.

MICONIA FOSBERGII Wurdack, sp. nov.

M. multuplinerviae Cogn. et M. penicillatae Gleas. in antherarum forma affinis, sed foliis supra planis.

Ramuli quadrati vel sulcato-quadrati ad nodos annulatum incrassati annulo corneo 1-2 mm elevato, primum sicut petioli modice stellulato-puberuli et modice pilis 2.5-4(-5) mm longis ad apicem penicillato-stellatis setosi demum glabrati. Petioli 4-8 cm; lamina 15-25 X 9-14 cm vel ultra chartacea elliptica apice acuto basi obtusa margine serrulato dentibus ca. 2 mm inter se distantibus 0.5 mm altis et ciliolato pilis 0.5-0.7 mm longis incurvo-erectis, 7-9-plinervata nervis subalternatim 0.3-3 cm supra basim insertis nervis secundariis 4-8 mm inter se distantibus tertiariis laxe reticulatis, supra primum densiuscule stellato-puberula et sparse pilis robustis 0.5-2 mm longis siccitate luteis simplicibus obsita demum glabrata, subtus in nervis nervulisque modice et in superficie sparse stellato-puberula. Panicula 10-15 cm longa pyramidata multiflora ramis ramulisque sparse pilis erectis 0.5-1 mm longis ad apicem penicillato-stellatis obsitis sicut hypanthium modice stellato-puberula; flores 5-meri ad ramuli extremitates vel in ramulis capitato-aggregati; pedicelli 0.5-0.8 mm longi ad basim bibracteolati, bracteolis 0.6 X 0.1-0.2 mm acutis ad anthesim plusminusve caducis. Hypanthium 1.8 X 1.8 mm; torus ciliolatus pilis 0.1 mm longis glanduliferis; calycis tubus 0.2 mm altus, lobis interioribus 0.3 mm altis ad basim remotiusculis apice rotundato, dentibus exterioribus tuberculatis non eminentibus. Petala 2.4 X 1.7-2 mm late elliptica glabra apice rotundato. Stamina glabra paulo dimorphica; filamenta 2.2-2.4 mm; antherarum thecae 1.7 mm longae spathulatae apicem versus curvatae ad apicem profunde (0.2-0.3 mm) emarginatae introrse biporosae. Stylus 3 X 0.2-0.3 mm glaber; stigma capitellatum 0.5 mm diam.; ovarium 3-loculare 1/3-inferum apice conico 0.5 mm alto sparse glanduloso-setuloso.

Type Collection: F. R. Fosberg & M. A. Giler 22971 (holotype US 2143072; isotype US), collected in wet forest on a steep slope near Monos, 14 km w.n.w. of Zaruma, Zaruma Basin, Prov. El Oro, Ecuador, elev. 1230-1280 m, 11 Feb. 1945. "Shrub 2 m tall; leaves glaucous beneath. Flowers white."

Both suggested relatives have bullate-setose upper leaf surfaces and non-scutate nodes; all three species have stipitate-

stellate cauline pubescence (although the hairs in *M. fosbergii* are more robust) and apically curved anthers with deeply emarginate apex. All the other plinerved species of Sect. *Amblyarrhena*, with the possible exception of *M. rivetii* Dang. & Cherm., differ in floral details, especially in the anthers; that Ecuadorian species, known to me by the type photograph and several recent incomplete collections, differs at least in the very fine (almost formless) lower leaf surface pubescence and non-scutate nodes. In the search for affinities of *M. fosbergii*, Sections *Chaenopleura*, *Cremanium*, and *Chaenantha* were also canvassed because of the distinctive but sectionally inconclusive anthers. *M. polyneura* Triana, *M. saxatilis* Macbr., *M. polygama* Cogn., *M. valida* Cogn., and (ex descr.) *M. rhonhofiae* Mgf. all seem to have a few vegetative characters in common with *M. fosbergii*, but differ in floral features.

MICONIA PARADISICA Wurdack, sp. nov.

Sect. *Cremanium*. *M. pulverulentae* R. & P. affinis, sed foliis 3- vel sub-5-nervatis subtus pilis stipitato-stellatis armatis alabastrorum hypanthiis glabris.

Ramuli primum obtusi-quadrangulati demum teretes sicut petioli inflorescentiae ramique primum modice pilis stellulatis 0.1-0.2 mm altis obsiti tarde glabrati; petioli 1-2 cm; lamina 7-13 X 3-6 cm chartacea elliptica vel paulo obovato-elliptica apice anguste hebeti-acuto basi late obtusa vel paulo rotundata margine integro et distanter (1.5-3 mm) appresso-ciliolato, trinervata (jugo tenui inframarginali neglecto), nervis secundariis 3-5 mm inter se distantibus sicut tertiariis supra obscure impressis subtus paulo elevatis nervulis reticulatis areolis ca. 0.4-0.5 mm latis, supra primum sparse stellulato-puberula mox (costa excepta) glabrata, subtus in nervis primariis dense stellulato-puberula et pilis barbellatis vel stipitato-stellatis 0.3-0.5 mm longis armata in nervulis pilis stellatis (0.3-) 0.4-0.5 mm stipitatis modice obsita in superficie vera glabra. Panicula 7-10 cm longa late pyramidata; flores 5-meri in ramulis interrupto-glomerati paene sessiles, bracteis bracteolisque 0.5-1 mm longis ovato-lanceolatis sparse furfuraceis usque ad anthesim persistentibus. Hypanthium (ad torum) 1.3 X 1.4 mm glabrum; calycis tubus 0.3 mm altus, lobis interioribus 0.4 mm altis late ovatis ad basim remotis apice plerumque rotundato, dentibus exterioribus callosis acutis non eminentibus. Petala glabra 1.1-1.3 X 0.8-0.9 mm obovato-oblonga apice rotundato et emarginato. Stamina glabra in dimensionibus minute anisomorphica; filamenta 1.3-1.5 mm; antherarum thecae 0.7-0.8 X 0.3-0.4 mm apice late biporoso, connectivo usque ad filamentum insertionem 0.3-0.4 mm prolongato minute bilobulato 0.3 mm lato oblongo. Stylus 1.5 X 0.15 mm glaber paulo exsertus; stigma 0.25 mm diam.; ovarium abortivum apice pilis 2-3 barbellatis 0.1 mm longis ornato.

Type Collection: J. J. Wurdack 1055 (holotype US 2404249; isotype USM; 3 additional isotypes to be distributed), collected

at the edge of the montane rainforest along the Yamborasbamba-Pomacocha trail (between Yamborasbamba and Yanayacu), Prov. Bongará, Depto. Amazonas, Peru, elev. 2200-2300 m, 26 June 1962. "Shrub 3-6 m, occasional. Flowers white."

M. pulverulenta has distinctly 5-7-nerved leaf blades, the lower surface and veinlet hairs being sessile or imperceptibly (to 0.1 mm) stalked; the densely roughened cauline hairs are often 0.7 mm long and the young hypanthia are sparsely stellulate-puberulous. Probably M. pulverulenta is dioecious, the type collection (fide Macbride photo 17144 and Cogniaux' description) having well-developed anthers and a scarcely expanded stigma, while recent collections (cited by Macbride and agreeing very well vegetatively with the Ruiz collection) have semi-abortive anthers and capitellate stigmas. Wurdack 1055 is male, the abortive ovaries being barely raised above the hypanthial floor; the specific epithet refers to the type locality, abounding in melastomes. Other close relatives of M. paradisica are M. valida Cogn. (with much larger leaves and slightly larger flowers, the hypanthia caducously furfuraceous), M. saxatilis Macbride (with larger basally attenuate shortly triplinerved leaf blades, more compact lower leaf surface pubescence, and early-furfuraceous hypanthia), and M. galactantha Naud. (with, ex descr. and Macbride photo 17165, sharply 4-angled stems and much less congested flowers). Both M. tiri Triana and M. coelestis Naud. have much larger flowers and different foliage; Naudin remarked (in his description of the misidentified M. pulverulenta) that the Dombey collection had one-pored anthers and a recent Huánuco collection (Woytkowski 7998), agreeing perfectly with Macbride's photograph (26039) of M. tiri, shows anthers of Sect. Amblyarrhena rather than Cremanium.

MICONIA PENNINGTONII Wurdack, sp. nov.

Sect. Cremanium. M. plethoricae Naud. affinis, sed ramis ad nodos non dilatato-compressis ramulorum petiolorumque pilis erectis ad apices non penicillatis, floribus plerumque 4-meris.

Ramuli primum obtuse quadrisulcati demum teretes sicut petioli pedunculusque modice pilis erectis 1.5-2(-3) mm longis basim versus imperspicue muriculatis plusminusve persistentibus armati et sicut inflorescentiae ramuli modice vel densiuscule pilis pinoideis (i. e. dense barbellato-muriculatis) 0.2-0.5 mm longis demum caducis obsiti. Petioli 2-3.5 cm; lamina 11-17 X 5-7 cm subcoriacea apice breviuscule (ca. 1 cm) gradatimque hebeti-acuminato basi obtusa vel rotundata margine integro et ciliolato pilis 0.5-0.7 mm longis erectis vel paulo appressis ca. 2 mm inter se distantibus, 5-nervata jugo exteriori debili infra-marginali nervis secundariis tertiariisque supra obscure impressis secundariis 5-7 mm inter se distantibus nervulis subtus planis laxe reticulatis areolis ca. 0.5 mm latis, supra glabra et nitidula, subtus primum dense pinoideo-puberula pilis 0.1(-0.3) mm longis demum in superficie glabrata. Inflorescentia 10-12 cm longa multiflora; flores 4(-5)-meri in ramulis conferti plerumque sessiles (interdum ad 1 mm pedicellati) bracteolis 1-1.5 X 0.15-0.2 mm linearibus furfuraceis mox (ante anthesim) caducis. Hypanthium (ad torum) 2 X 2 mm primum sparse stellulato-furfura-

ceum mox glabratum; calycis tubus 0.3 mm altus, lobis interioribus 0.6 mm altis apice rotundato, dentibus exterioribus callosis non eminentibus. Petala (sub lente) minutissime granulosa 1.5-1.6 X 1.2-1.3 mm obovata apice asymmetricice truncato vel rotundato. Stamina isomorphica glabra; filamenta 2.8-3 mm; antherarum thecae 1.9-2.1 X 0.45 X 0.6-0.7 mm oblongae vel paulo obovato-oblongae late biporosae, connectivo ad basim ventraliter minute bilobulato dorsaliter imperspicue (0.1 mm) elevato. Stylus 4 X 0.4 mm glaber exsertus; stigma paulo expansum 0.6 mm diam.; ovarium 2-loculare 1/3 inferum glabrum apice conico 0.5 mm alto et in collum 0.5 mm altum circum stylum protracto.

Type Collection: P. C. D. Cazalet & T. D. Pennington 5602 (holotype US 2405349; isotype NY), collected in dwarf forest on the Oriente trail E.N.E. of Cayambe Mountain, Prov. Napo-Pastaza, Ecuador, elev. 2900 m, 15 Dec. 1961. "20' tree, little-branching. Leaves with golden-brown meal below. Corolla greenish white, stamens pale cream."

M. plethorica (see Cuatrecasas & Jaramillo 12012, US) has notably compressed-dilated branch nodes, stem hairs frayed at the apex, and leaf margin teeth merely callose. Other close relatives include M. orcheotoma Naud. (with much shorter and apically barbellate stem hairs, as well as densely stellulate-puberulous hypanthia), M. pastoensis Triana (with much shorter and apically densely barbellate stem hairs, smaller leaf blades, and pedicellate flowers), M. polyneura Triana (with glabrate branchlets and pedicellate flowers), and M. cladonia Gleason (with stem and lower leaf surface hairs branched and with spicules 0.1-0.3 mm long, as well as relatively broader anthers). More remote relatives in Sect. Cremanium include M. hygrophila Naud., M. purulensis D. Sm., M. tuckeri Gleason, M. vitiflora Macbr., and M. pulverulenta R. & P. Of the 13 flowers counted in M. penningtonii, 11 were 4-merous and the remainder 5-merous; despite this predominance of 4-mery, the relationships do not seem at all to be with species 482-485 of Cogniaux' arrangement.

MICONIA JENTACULORUM Wurdack, sp. nov.

In systema Cogniauxii de speciebus 434-436 differt foliis minoribus hypanthiis maioribus.

Rami obtuse quadrangulati demum teretes sicut petioli foliorum juvenilium costae supra inflorescentiaque pilis barbellatis gracilibus cinereis 0.5-0.7(-1) mm longis dense obsiti pilorum parte apicali demum caduca. Petioli 5-8 mm longi; lamina 2-4(-4.5) X 1.3-2.5 cm elliptica vel ovato-elliptica crasse rigida apice late hebeti-acuto vel anguste hebeti-obtuso basi rotundata vel paulo (ad 2 mm) cordata auriculis basalibus proximis margine revoluta et obscure serrulato, paulo (ca. 1 mm) triplinervata (jugo inframarginali obscuro neglecto) nervis secundariis 1.5-2 mm inter se distantibus supra obscure impressis subtus crasse elevatis tertiariis supra obscuris subtus crasse elevatis et reticulatis, utrinque primum dense pilis barbellatis 0.2-0.4 mm longis obsita supra (costa excepta) mox glabrata subtus persistenter puberula pilis ca. 0.1 mm longis barbellatis. Inflores-

centia 2-3 cm longa confertiflora, bracteis bracteolisque 2-3 X 0.3-0.5 mm paulo puberulis conspicuis ad anthesim caducis; flores 5-meri sessiles. Hypanthium (ad torum) 2.7 X 2.6 mm dense pilis barbellatis 0.1-0.2 mm longis obsitum; calycis tubus 0.2-0.3 mm altus, lobis interioribus 0.6 mm longis oblongis apice rotundato, dentibus exterioribus inconspicuis appressis non eminentibus. Petala glabra 2.3-2.4 X 1.4 mm obovato-oblonga apice oblique rotundato et vix retuso. Stamina inconspicue dimorphica glabra; filamenta 2-2.1 mm; antherarum thecae 1.4-1.5 X 0.5 mm vel 1.2-1.3 X 0.6 mm oblongae ad apicem late (0.4 mm) biporosae, connectivo ad basim dorsaliter inconspicue (0.1 mm) hebeti-dentato ventraliter 0.25-0.3 mm prolongato et paulo bilobulato. Stylus 4 X 0.4 mm glaber; stigma paulo clavatum 0.5-0.6 mm diam.; ovarium 3-loculare paulo inferum apice in collum conicum 0.8-1 mm altum minutissime setulosum circum stylum protracto.

Type Collection: J. Cuatrecasas 13530 (holotype US 1852466; isotype NY), collected in the Páramo del Almorzadero "extrema sur en Peralonso", Cordillera Oriental, Depto. Santander, Colombia, elev. 3100 m, 28 Nov. 1941. "Frutex. Pétalos y estambres blanco-amarillentos."

Paratype: same locality data, fruiting, 19 Jul. 1940, Cuatrecasas & Garcia Barriga 9925 (US).

While M. jentaculorum has somewhat the vegetative aspect of M. rigens Naud., it does not seem florally closely related. The sessile flowers would key the Peralonso endemic to M. bracteolata (Bonpl.) Naud., M. hygrophila Naud., and M. caelata (Bonpl.) DC., all of which have smaller flowers (hypanthium to the torus 1-1.3 mm long) and quite different larger leaves. In pubescence, perhaps M. hygrophila and also M. elaeoides Naud. are the closest relatives; the latter species differs in the much thinner glabrescent leaves and glabrous smaller hypanthia. The specific epithet chosen for M. jentaculorum refers to the type páramo.

MICONIA DIELSII Markgraf ex char.

This Ecuadorian species seems to show heterostyly (dioecism?). A female flowering collection (Hitchcock 21824, from between Baños and Casnurco, Tungurahua) has abortive anthers and a capitate stigma on a well-exserted style; male material (Skutch 4514, from Puyo, Napo-Pastaza, originally distributed as M. brevitheca Gleason) shows well-developed anthers, but a scarcely exserted style with minute barely expanded stigma. A fruiting collection is Asplund 19470 (S) from Vera Cruz, Napo-Pastaza. Very minute red-brown sessile glands are frequent on the hypanthia and inflorescence branches, as well as occasionally tipping the spicules of the rather scurfy tiny dendritic inflorescence hairs.

MICONIA PALUDIGENA Wurdack, sp. nov.

Sect. Cremanium. M. salicifoliae (Bonpl.) Naud. affinis, sed foliis usque ad apicem distincte trinervatis subtus in superficie glabris, calycis dentibus exterioribus paulo eminentibus.

Ramuli teretes sicut petioli inflorescentiaque primum dense pilis dense barbellatis 0.1-0.3 mm longis ad basim crassis primum

ravis demum fuscis armati. Petioli 1.5-2 mm; lamina 10-15(-20) X 4-6 mm rigida integra apice acuto basi late acuta, supra glabra, subtus in venis primariis sparse vel modice furfuracea in venis secundariis primum sparse furfuracea mox glabrata, trinervata nervis primariis supra conspicue impressis subtus elevatis nervis secundariis supra obscuris subtus evolutis et ca. 0.3-0.5 mm inter se distantibus tertiariis non evolutis. Paniculae numerosae racemiformes paulo declinatae 3-7-florae furfuraceae; flores 4-meri ca. 2 (demum usque ad 3) mm pedicellati, bracteolis subpersistentibus 2 X 1 mm ovato-lanceolatis ca. 0.4 mm infra hypanthii basim insertis. Hypanthium (ad torum) 2-2.2 X 2 mm primum praecipue basim versus sparse furfuraceum demum glabratum; calycis tubus 0.2 mm altus, lobis interioribus 0.3 mm altis triangularibus ad basim remotis, dentibus exterioribus 0.1-0.2 mm eminentibus ad apicem setiformibus. Petala granulosa 1 X 1.4 mm oblata apice rotundato. Filamenta 1.3-1.5 mm longa basim versus glabra apicem versus (ad connectivi insertionem) dorsaliter sparse glanduloso-puberula; antherarum thecae 1 X 0.8 mm late biporosae, connectivo ad apicem ca. 0.4 mm eminente dorsaliter ad basim paulo (0.1 mm) elevato non appendiculato. Stylus 2.7 X 0.25 mm densiuscule puberulus pilis 0.1-0.2 mm longis glanduliferis; stigma 1.3-1.5 mm longum ovoideum; ovarium 2-loculare 1/2 inferum apice conico 0.5-0.7 mm alto modice setuloso setulis 0.2-0.3 mm longis p. p. glanduliferis.

Type Collection: J. J. Wurdack 1218 (holotype US 2404271; isotype USM; 4 additional isotypes to be distributed), collected in an open cold swamp on the summit of the Cerros Calla-Calla, between Balsas-Leimebamba road pass and the camino de herradura (2 hours walk south), Prov. Chachapoyas, Depto. Amazonas, Peru, elev. 3500-3750 m, 8 Jul. 1962. "Shrub 1 m, occasional. Fruit purplish."

M. salicifolia has longer leaves which are faintly 3-nerved basally and densely tawny-furfuraceous beneath, densely furfuraceous hypanthia, and infra-marginal external calyx teeth. Perhaps a closer relative, at least vegetatively, is an undescribed Ecuadorian species (to be based on Prieto P-312), which has 1-nerved leaf blades. The other 4-merous species of Sect. Cremanium in Cogniaux' monograph, M. vaccinoides (Bonpl.) Naud., at least as far as the type photograph and Weberbauer collections (F) indicate, has proportionately wider leaves with laxer secondary veins, amorpho-squamulose soon glabrate young branchlets, and longer oblong interior calyx lobes with blunt non-projecting external teeth. Another undescribed species in this alliance was collected on Puma-urcu above Chachapoyas (Wurdack 787) and resembles vegetatively M. ledifolia (DC.) Naud., but with 4-merous fruits similar to those of M. salicifolia. Unfortunately, and not as in M. paludigena, flower remnants are completely lacking for the Puma-urcu shrub.

MICONIA BULLATA (Turcz.) Triana

M. trichocaula Macbr., Field Mus. Publ. Bot. 4: 189. 1923.

After comparison of Mathews 873 (K) with Weberbauer 6094 (US), there seems no valid separation of the two taxa; the Kew material shows abundant simple cauline hairs as well as scurfy-plumose ones. M. bullata is now also known from Ecuador (Prieto P-287) and Amazonas, Peru (Wurdack 1705).

MICONIA SECUNDIFOLIA Cogn. subsp. MALCABALENSIS Wurdack, subsp. nov.

A subsp. typica petiolis laminis floribusque minoribus, laminis plerumque ellipticis vel paulo ovato-ellipticis trinerviatis venis tertiariis subtus planis vel paulo impressis differt.

Type Collection: J. J. Wurdack 1419 (holotype US 2404299; isotype USM; 5 additional isotypes to be distributed), collected on the summit of Cerro Malcabal (Cerro Tumbe) 3-6 km southwest of Molinopampa, Prov. Chachapoyas, Depto. Amazonas, Peru, elev. 2850-2900 m, 20 Jul. 1962. "Shrub 2 m. Corolla white; anthers yellow."

In the typical subspecies, collected by Weberbauer on the eastern slopes of the eastern cordillera, the petioles are 1.2-2 cm long and the ovate leaf blades 6.5-10 X 4.5-5.5 cm; the tertiary veins on the lower leaf surface are prominently reticulate-raised and the hypanthium plus calyx tube (dry) is 3.2-3.4 mm long. In the Malcabal shrubs, the petioles are 0.4-0.7 cm long, the leaf blades 3-4.2 X 1.8-2.3 cm, and the hypanthium plus calyx tube (dry) 2.6-2.8 mm long. Despite the disparity in superficial aspect, subsp. malcabalensis seems to be only a higher-elevation exposed-habitat variant of the typical subspecies. Subsp. secundifolia is still known to me only from the type collection; Macbride's excellent photograph (17159) and Gleason's notes from the Berlin specimen are sufficient for the species-level disposition of the Malcabal population. The Cogniaux epithet is probably inappropriate for the living plants, the secund leaves apparently being the result of specimen preparation and not seen in Wurdack 1419. M. nigricans is a close relative of M. secundifolia, but has much finer pubescence, proportionately narrower leaves, and somewhat smaller flowers with much less developed calyx teeth. Apart from the Tambo Ventillas type, M. nigricans is also known from the middle eastern Calla-Calla slopes (Wurdack 1261). Both species differ from the usual species of Sect. Chaenopleura in the very narrow dehiscence of the anther thecae (extending for about 3/4 of the thecal length) and are somewhat suggestive of Sect. Chaenantha.

TOCOCA SYMPHYANDRA (Triana) Cogn.

Tococa variegata Mgf., Notizbl. Bot. Gart. Berlin 15: 379. 30 Mar. 1941.

Miconia barbicaulis Gleason, Bull. Torrey Club 68: 248. 1 Apr. 1941.

Gleason's notes on the Kew material (Triana 4102, Kalbreyer 1836) and Triana's floral sketches (K) have confirmed the identity of Haught 5224 and 5225 (both from west of Tambo, Cauca, Colombia, elev. 1100 m, somewhat north of the type locality but on the

western flank of the western cordillera). The following Ecuadorian collections (all Napo-Pastaza) are the same species as is represented by Haught's collections: Skutch 4420 (US) and Fagerlind & Wibom 1167 (S), Puyo; Harling 3269 (S), Canelos; and Harling 3388 (S), Mera. Haught's collections show forms with green (5225) and purple-tinged (5224, deep red in vivo fide Haught) lower leaf surfaces. Harling 3388 and Fagerlind & Wibom 1167 have green leaves, while the other two Ecuadorian collections are like Haught 5224. The upper leaf surface hairs (i. s.) vary from yellow to castaneous. Probably these color forms are analogous to those in Clidemia allardii Wurdack (Phytologia 9: 425. 1964). Markgraf's excellent description, plus later Ecuadorian collections, leaves no doubt as to the synonymization of T. variegata; Gleason's notes indicate that Berlin did not have T. symphyandra represented in its collections, at least in 1930. Perhaps a legalistic purist would care to designate a neotype for T. variegata, but this scarcely seems necessary. As suggested by Markgraf, T. parviflora Spruce ex Triana, also with a hyaline apiculate calyx cone rupturing rather irregularly, is perhaps the closest relative within Tococa, but with quite differently shaped anthers. Admittedly the anther shape may eventually impel placement in Miconia, with reversion then to Triana's basionym. The white foliar macules noted by Markgraf are especially prominent in Skutch 4420, less so and less regular in the other collections; these pale regions are not phanerogamogenetic but rather, fide Dr. Harold Robinson, colonies of a septate fungus.

CLIDEMIA DENSIFLORA (Standl.) Gleason

Two Ecuadorian collections (Asplund 18620, 19602) from Mera, Napo-Pastaza, agree in all essential details with the six Central American specimens available for study. The Mera sheets show somewhat firmer leaves than most, but not all, of the more northern specimens. As noted in the discussion of C. chocoensis (Phytologia 7: 238. 1960), the species seems well accommodated within Clidemia, but certainly neither in Henriettella nor (even further astray) Henriettea.

CLIDEMIA URIBEI Wurdack, sp. nov.

C. obliquae (Griseb.) Cogn. affinis sed ramulis teretibus foliis distincte cordatis supra pustulatis.

Ramuli primum paulo compressi demum teretes sicut petioli foliorum venae principales subtus primum modice setulosi pilis gracillimis flexuosis demum plusminusve deflexis 0.7-1 (vel in petiolis ad 1.5) mm longis demum glabrati et inconspicue caduceque stellulato-furfuracei. Petioli 2-4(-6) cm; lamina (7-)9-14 X 4-9 cm fragilis tenuis ovata vel anguste ovata apice acuto vel gradatim acuminato basi (2-)4-8 mm cordata margine distincte ciliolato-serrulato dentibus hebetibus 1-1.5 mm profundis et 2-3(-4) mm inter se distantibus, 7-nervata nervis secundariis 3-4 mm inter se distantibus tertiariis nervulisque reticulatis, supra distincte pustulata et strigulosa pilis laxis 0.3-1 mm longis, subtus in nervulis sparse setulosa pilis gracilibus laxis.

Flores in foliorum axillis congesti numerosi plerumque 4-meri breviter (ca. 0.5 mm) pedicellati, bracteolis ad pedicelli basim insertis 0.3-0.5 X 0.2-0.3 mm lanceolatis persistentibus. Hypanthium (ad torum) 2.3-2.5 mm sparsissime vel modice setulosum pilis 0.2-0.3(-0.5) mm longis et praecipue basim versus sparse stellulato-puberulum; calycis tubus 0.4-0.5 mm altus, lobis interioribus inconspicuis 0.3 mm altis apice rotundato, dentibus exterioribus 0.5-0.9 mm eminentibus oblongo-triangularibus apice setuloso. Petala glabra 1.8-2 X 0.9-1 mm oblonga apice emarginato-truncato. Stamina isomorphica glabra; filamenta 2.2-2.9 mm; antherarum thecae 2-2.3 mm longae ad apicem ventraliter minute (0.1 mm) uniporosae, connectivo exappendiculato non prolongato. Stylus 6.8 X 0.25-0.3 mm glaber; stigma truncatum non expansum; ovarium 2(-3)-loculare omnino inferum apice glabro et paulo excavato.

Type Collection: Lorenzo Uribe Uribe 3910 (holotype US 2371598; isotype COL), collected in Caño Garrapato, Tauramena, Casanare, Colombia, elev. 600 m, 2 Dec. 1961. "Arbustillo de 1.5 m de altura, muy ramoso. Flores blancas y frutos violáceas."

Paratypes (all Colombia): Uribe 4286, from Río Caja, Tauramena, Casanare, elev. 500-550 m. "Arbusto de 1 metro de altura. Corola blanca."; Uribe 3776, from Quebrada Cañoseco 4 km north of Tauramena, Casanare, elev. 500 m. "Arbusto delgado de 1-2 metros de altura. Follaje de un color verde satinado muy elegante. Flores blancas."; Cuatrecasas 4505 (F, US), from Villavicencio, Meta, elev. 500 m; S. G. Smith & J. M. Idrobo 1564 (US), from a sandstone outcrop 2 km east of Río Zanza above junction with Río Güejar, north end of Cordillera Macarena, Meta, elev. 500 m. "Herb, woody at base, 0.5 m tall; flowers white."

C. obliqua has quadrate slightly wing-angled stems, with leaf blades merely rounded at the base and plane on the upper surface. *C. acutifolia* Cogn. has non-bullulate leaf blades and a slightly evolved cymose inflorescence. The other species known to me in this complex, *C. fissinervia* Gleason, is intermediate in so many features between the above-mentioned pair that it may well represent a hybrid in the species populations around Mapiri, Bolivia; another puzzling element is represented by Buchtien 1053, with esetulose veins on the lower leaf surface and cauline nodes without an interpetiolar line, but otherwise as in *C. obliqua*. One notable feature in *C. obliqua* (also true in Buchtien 1053) is the presence of short glandular hairs on the hypanthium which become obvious on the fruit by stalk elongation after anthesis.

One species placed in this complex by Cogniaux, *C. rariflora* (Bonpl.) Cogn. (the name a later homonym), is known to me only by the description, but surely differs from *C. uribei* (plane leaves, inflorescences 3-6 cm long). Perhaps because of the fasciculate flowers, *C. uribei* would key in Cogniaux' monograph to *C. petiolata* DC. or *C. micrantha* Sagot; the former has somewhat longer plane leaf blades which are glabrous beneath and have the inner pair of primaries inserted above the base, as well as glandular-setulose hypanthia. *C. micrantha* (Sagot 1143, BR) differs in the finer

(0.5-0.8 mm deep) leaf margin serrations, plane upper leaf surfaces, and rather densely short-setose (hairs 1.2-1.7 mm long) hypanthia; only one bud is present on the isotype, so other floral differences could not be established. C. aphanantha (Naud.) Sagot differs from C. uribei, at least as far as Poeppig 2511 (US) shows, in the partly glanduliferous (as well as denser and longer) hypanthial pubescence, setuliferous ovary apices, and plane upper leaf surfaces. At the moment, type material is not at hand to evaluate R. O. Williams' treatment (Flora of Trinidad & Tobago) of C. debilis (Crueg.) Cogn. to include C. aphanantha and C. bonplandii (Naud.) Cogn.

In Cuatrecasas 4505, three 5-merous flowers were seen, but the other six observable flowers in this collection were 4-merous as were all the discernible flowers in the other collections; the Villavicencio collection also is more glabrescent than the other materials. It is meet that Padre Uribe's name should be commemorated in the Melastomataceae, his own meticulous studies having clarified puzzling problems in the Colombian flora; his well-prepared specimens all-too-often have been sources of Dullesian reappraisal for me and only infrequently easy of determination.

LOREYA UMBELLATA (Gleason) Wurdack, comb. nov.

Bellucia umbellata Gleason, Bull. Torrey Club 58: 257. 1931.

Both L. arborescens (Aubl.) Naud. and L. acutifolia Berg ex Triana are very similar in floral structure to L. umbellata; all have anthers bipored, the pores very close together at the connective end, and more-or-less thickened regions on the adaxial sides of the petals about 1/4-1/3 below the apex, as well as some development of lateral flanges on the petals at this callused region. L. arborescens is the generotype; certainly for the three above-mentioned species, there is no justification for union with Bellucia. Rather, the closest generic affinities of Loreya are with Henriettea and Henriettella. L. umbellata is amply distinct vegetatively from its closest relatives; there is some slight variability in flower and stigma size, but not of subspecific significance. The species range includes Colombia (Rhodora 65: 18. 1963), Ecuador (20 km west of Santa Domingo de los Colorados, Pichincha, Cazalet & Pennington 5049; Quininde, Esmeraldas, Little 6223), and northeastern Peru.

BLAKEA BRACTEATA Gleas. subsp. ECUADORENSIS Wurdack, subsp. nov.

A subsp. bracteata foliis subtus in costa basim versus sparsissime setulosis in venis secundariis superficieque glabris, bracteis exterioribus extus glabris differt.

Type Collection: P. J. Grubb, J. R. Lloyd, T. D. Pennington, & T. C. Whitmore 93 (holotype US 2369301), collected at the forest edge at Talag, 15 km SSW of Tena, Prov. Napo-Pastaza, Ecuador, elev. 600 m, 9 Jul. 1960. "Liana, flowers pink."

Paratype: Grubb et al 59, from the same locality, elev. 750 m.

The typical subspecies has the lower leaf surfaces and outer bracts both without and within moderately fine-setose. In subsp.

ecuadorensis, the young branchlets, petioles, and pedicels are sparsely and caducously fine-setose; the external bracts are very sparsely fine-setose marginally inside. In floral characters, the two subspecies are the same, with calycine and corollar hairs caducously gland-tipped. The typical subspecies has now also been collected in Ecuador at Canelos, Napo-Pastaza (Harling 3309, S). B. hispida Mgf. must be rather similar to B. bracteata, but differs in the hispid hypanthia and setulose ovary apices.

MATERIALS TOWARD A MONOGRAPH OF THE GENUS VERBENA. XXVIII

Harold N. Moldenke

VERBENA URTICIFOLIA L.

Additional bibliography: Moldenke, *Phytologia* 11: 315, 316, & 326--357. 1954.

Additional citations: ILLINOIS: Winnebago Co.: E. W. Fell 51324 (Il--38585); Fell & Fell F.46531 (Il--20632); Fuller & Haime 271fa (Il--15812), 2534h (Il--15809). Woodford Co.: V. H. Chase 9991 (Ur, Ur, Ur, Ur); G. N. Jones 14299 (Ur). County undetermined: Collector undesignated s.n. [Boewe] (Il--15804); Vasey 3 (Il--16007). INDIANA: Allen Co.: C. C. Deam 1362 (Dm). Boone Co.: Friesner 16989 (Bt--62551); S. McCoy 5293 (Bt--51739); A. R. Moldenke 805 (Lw), 806 (Lw). Cass Co.: C. C. Deam 51078 (Dm). Clark Co.: C. C. Deam 23792 (Dm). Clay Co.: S. M. Deam s.n. [C. C. Deam 13868] (Dm). Clinton Co.: Ek s.n. [8-27-1941] (Bt--57380). Crawford Co.: Friesner 11815 (Bt--36886). Decatur Co.: C. C. Deam 58272 (N). Elkhart Co.: C. C. Deam 50429 (Dm). Franklin Co.: Friesner 12448 (Bt--42140); S. McCoy 4172 (Dp--4663). Fulton Co.: Friesner 23098 (Ca--803863, Ok, S, St). Gibson Co.: Schneck s.n. [July 1888] (Dm). Greene Co.: Friesner 22932 (B, N). Hamilton Co.: Friesner 6044 (Bt--13456); A. R. Moldenke 21912 (Lw). Hancock Co.: Friesner 18618 (N). Harrison Co.: C. C. Deam 41511 (Dm); G. Een s.n. [16.7.1950] (S). Hendricks Co.: Friesner 17081 (Bt--61356). Henry Co.: H. N. Moldenke 21911 (Lw). Howard Co.: C. C. Deam 58234 (N); Ek s.n. [7-24-1935] (Bt--42527), s.n. [7-29-1936] (Bt--42528); Friesner 11674 (Bt--37459). Jasper Co.: C. C. Deam 42039 (Dm); Welch 202 (Dp, Ur, Ur). Jefferson Co.: M. S. Coulter s.n. [Hanover, 1873] (Pu); C. C. Deam 47453 (Dm). Jennings Co.: C. C. Deam 58280 (N, Ok); S. McCoy 417 (Dp--4675). Knox Co.: C. C. Deam 51479 (Dm). Kosciusko Co.: Friesner 12664 (Bt--41724). Lagrange Co.: C. C. Deam 51033 (Dm); Friesner 15639 (Bt--55058). Lake Co.: Lansing 2806 (W--753090). Laporte Co.: C. C. Deam 43723 (Dm); Friesner 14991 (Bt--52373); W. H.